

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1.(original): A method for identifying a compound that modulates aging, the method comprising the steps of : (i) contacting the compound with a polypeptide, wherein the polypeptide is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid listed in Tables 1 or 3-7, or a nucleic acid encoding a polypeptide listed in Tables 1 or 3- 7or mammalian homologs and orthologs thereof; and (ii) determining the functional effect of the compound upon the polypeptide.

Claim 2.(original): The method of claim 1, wherein the homolog or ortholog is a human homolog or ortholog.

Claim 3.(original): The method of claim 2, wherein the human homolog or ortholog is a human cellular stress-response gene, a human antimicrobial gene, a human metabolic gene, a human steroid or lipid-soluble hormone synthesis gene, or a human fatty acid desaturation gene.

Claim 4.(original): The method of claim 2, wherein the human homolog or ortholog is a cytochrome P450, an estradiol-17-0-dehydrogenase, a alcohol/short-chain dehydrogenase, an esterase, a UDP-glucuronosyltransferase, an aminopeptidase, a carboxypeptidase, an amino-oxidase, an aminoacylase, an oligopeptide transporter, metallothionein, a receptor guanylate cyclase, a mitochondrial superoxide dismutase, a catalase, lysosyme, saposin, vitellogenin, glutathione-S-transferase, heat-shock protein, heat shock factor, an F-box/cullin/Skp protein, an isocitrate lyase, a malate synthase ASMTL, insulin, IFG1 or IFG2.

Claim 5.(original): The method of claim 1, wherein the polypeptide is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid listed in Tables 5- 6,

or a nucleic acid encoding a polypeptide listed in Tables 5-6, or mammalian homologs or orthologs thereof.

Claim 6.(original): The method of claim 1, wherein the functional effect is determined in vitro.

Claim 7.(original): The method of claim 6, wherein the functional effect is determined by measuring enzymatic activity.

Claim 8.(original): The method of claim 6, wherein the functional effect is determined by measuring ligand, substrate, or cofactor binding to the polypeptide.

Claim 9.(original): The method of claim 6, wherein the functional effect is determined by measuring interaction between a nucleic acid and the polypeptide.

Claim 10.(original): The method of claim 1, wherein the polypeptide is expressed in a eukaryotic host or host cell and the polypeptide is contacted with the compound in a living cell.

Claim 11.(original): The method of claim 10, wherein the host cell is derived from *C. elegant*, mouse, rat, or human.

Claim 12.(original): The method of claim 10, wherein the host is *C. elegans*, mouse, rat, or human.

Claim 13.(original): The method of claim 10, wherein the functional effect is determined by measuring ligand, substrate, or cofactor binding to the polypeptide.

Claim 14.(original): The method of claim 10, wherein the functional effect is determined by measuring transcriptional activation.

Claim 15.(original): The method of claim 10, wherein the functional effect is determined by evaluating age-associated parameters.

Claim 16.(original): The method of claim 10, wherein the functional effect is determined by evaluating expression of an age-associated gene.

Claim 17.(original): The method of claim 15, wherein the age-associated parameter is lifespan.

Claim 18.(original): The method of claim 1, wherein the modulation is inhibition of aging.

Claim 19.(original): The method of claim 1, wherein the compound is an antibody, an antisense molecule, or a small molecule.

Claim 20.(original): The method of claim 18, wherein inhibition of aging occurs by inhibition of a polypeptide encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide comprising an amino acid sequence selected from the group consisting of the genes listed in Tables 1 or 3-7 or human homologs and orthologs thereof.

Claim 21.(original): A method for evaluating a compound for modulation of aging, the method comprising the steps of : (i) contacting the compound with a polypeptide, wherein the polypeptide is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid listed in Tables 1 or 3-7, or a nucleic acid encoding a polypeptide listed in Tables 1 or 3- 7, or mammalian homologs and orthologs thereof (ii) determining the functional effect of the compound upon the polypeptide; and (iii) contacting a host or host cell expressing the protein and evaluating an age-associated parameter of the host or host cell, thereby evaluating a compound for modulation of aging.

Claim 22.(original): The method of claim 21, wherein the homolog or orthologs is a human homolog or ortholog.

Claim 23.(original): The method of claim 22, wherein the human homolog or ortholog is a human cellular stress-response gene, a human antimicrobial gene, a human

metabolic gene, a human steroid or lipid-soluble hormone synthesis gene, or a human fatty acid desaturation gene.

Claim 24.(original): The method of claim 22, wherein the human homolog or ortholog is a cytochrome P450, an estradiol-17- β -dehydrogenase, a alcohol/short-chain dehydrogenase, an esterase, a UDP-glucuronosyltransferase, an aminopeptidase, a carboxypeptidase, an amino-oxidase, an aminoacylase, an oligopeptide transporter, metallothionein, a receptor guanylate cyclase, a mitochondrial superoxide dismutase, a catalase, lysosyme, saposin, vitellogenin, glutathione-S-transferase, heat-shock protein, an F-box/cullin/Skp protein, an isocitrate lyase, a malate synthase ASMTL, insulin, IFG1 or IFG2.

Claim 25.(original): The method of claim 21, wherein the polypeptide is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid listed in Tables 5- 6, or a nucleic acid encoding a polypeptide listed in Tables 5-6, or mammalian homologs and orthologs thereof.

Claim 26.(original): The method of claim 21, wherein the polypeptide is recombinant.

Claim 27.(original): The method of claim 21, wherein the compound is an antibody, an antisense molecule, or a small molecule.

Claim 28.(original): The method of claim 21, wherein the functional effect is a physical effect.

Claim 29.(original): The method of claim 21, wherein the functional effect is a chemical effect.

Claim 30.(original): The method of claim 21, wherein the functional effect is a phenotypic effect.

Claim 31.(original): The method of claim 21, wherein the functional effect is determined in vitro.

Claim 32.(original): The method of claim 21, wherein the functional effect is determined in a eukaryotic host organism or host cell.

Claim 33.(original): The method of claim 21, wherein the age-associated parameter is lifespan, wherein the age-associated parameter is stress resistance.

Claim 34.(currently amended): A compound that modulates an aging process, wherein the compound is identified by the method of claim 1-~~or 21~~.

Claim 35.(original): The compound of claim 34, wherein the compound is an antibody, an antisense molecule, or a small molecule.

Claim 36.(currently amended): A method of modulating lifespan regulation in a subject, the method comprising the step of administering to the subject an effective amount of a compound identified using the method of claim 1-~~or 21~~.

Claim 37.(original): The method of claim 36, wherein the subject is an adult.

Claim 38.(original): The method of claim 37, wherein the subject is a non-diabetic, non- obese adult.

Claim 39.(original): The method of claim 37, wherein the subject is not at risk for or does not have a premature aging disorder.

Claim 40.(original): The method of claim 37, wherein the subject is a healthy adult .

Claim 41.(currently amended): A method of increasing lifespan or treating premature aging in a subject, the method comprising the step of administering to the subject an effective amount of a compound identified using the method of claim 1-~~or 21~~.

Claim 42.(original): The method of claim 41, wherein the aging process is abnormal.

Claim 43.(original): The method of claim 42, wherein the abnormal aging process is selected from Werner syndrome, Hutchinson-Guilford disease, Bloom's syndrome, Cockayne's syndrome, ataxia telangiectasia, and Down's syndrome.

Claim 44.(original): The method of claim 41, wherein the aging process is normal.

Claim 45.(original): The method of claim 41, further comprising the step of evaluating an age-associated parameter of the subject.

Claim 46.(original): A method of identifying a compound that modulates aging, the method comprising the steps of : (i) contacting a test compound to a living or biochemical system that comprising a C. elegans target protein selected from the group consisting of : a protein in Tables 1 or 3- 7; and (ii) evaluating a property associated with the target protein; and (iii) evaluating an aging-associated parameter of a C. elegans organism contacted with the test compound.

Claim 47.(original): A C. elegans nematode that (1) has a deficiency in at least some cells for an endogenous activity, the deficiency generated by dsRNA in the cells, and (2) has an average lifespan of at least 40% greater than an otherwise identical nematode without the deficiency.

Claim 48.(original): A method of identifying a gene or gene product that modulates aging, the method comprising the steps of : (i) providing the nematode of claim 47; (ii) introducing a heterologous gene that encodes a heterologous polypeptide into the nematode; (iii) expressing the heterologous gene in the nematode or a progeny of the nematode under conditions wherein the heterologous polypeptide is produced; and (iv) monitoring an age-associated parameter of the nematode or the progeny of the nematode.

Claim 49.(original): The method of claim 48, further comprising contacting a test compound to the nematode or the progeny prior to or during the monitoring.

Claim 50.(original): A method of evaluating a plurality of compounds, the method comprising the steps of : providing a plurality of compounds; for each compound of the plurality, evaluating a functional effect of the respective compound on a polypeptide that is encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid listed in Tables 1 or 3-7, or a nucleic acid encoding a polypeptide listed in Tables 1 or 3-7or mammalian homologs and orthologs thereof; and if the compound has a functional effect as determined by a criterion, contacting the compound to a cell or organism, and evaluating an-age related parameter of the cell or organism.

Claim 51.(original): The method of claim 50 wherein the criterion is a preselected value.

Claim 52.(original): The method of claim 50, wherein the criterion is a preselected statistical significance.

Claim 53.(original): The method of claim 50, wherein the plurality of compounds comprises a library of structurally related chemical compounds.

Claim 54.(original): A method of altering lifespan regulation in a cell or organism, the method comprising: increasing expression of at least two class 1 genes in the cell or organism.

Claim 55.(original): The method of claim 54 wherein the step of increasing comprises introducing one or more heterologous nucleic acid that encode the at least two class 1 genes.

Claim 56.(original): The method of claim 54, wherein the step of introducing comprises introducing a single nucleic acid that comprises coding sequences for the at least two class 1 genes.

Claim 57.(new): A compound that modulates an aging process, wherein the compound is identified by the method of claim 21.

Claim 58.(new): A method of modulating lifespan regulation in a subject, the method comprising the step of administering to the subject an effective amount of a compound identified using the method of claim 21.

Claim 59.(new): The method of claim 37, wherein the subject is a healthy adult 41. A method of increasing lifespan or treating premature aging in a subject, the method comprising the step of administering to the subject an effective amount of a compound identified using the method of claim 21.